sponding signals pairs. It should be noted that at the end of step **1325**, there will be two sets of data, namely side A data and side B data, as depicted in FIGS. **18**(*a*) and **18**(*b*).

In step **1327**, all data is smoothed to ensure a smooth transition from the front forceplate to the rear forceplate. After being presented with the disclosure herein, one skilled in the relevant art will realize that a variety of data smoothing algorithms may be utilized in the present invention.

In step **1329**, a trajectory of the placement of each foot as it moves on the treadmill is preferably calculated from moment data (for instance M_x and M_y). Thus, the moment data is preferably used to determine which trajectory is the right foot and which trajectory is the left foot. This calculation process is known as calculating the Center of Pressure.

At this particular point in the process, side A data and side B data has been obtained. It has not been determined, however, whether side A data corresponds to the individual's left side/foot or right side/foot. Nor has it been determined whether side B data corresponds to the individual's left side/foot or right side/foot.

Thus, in step **1331**, the center of pressure data calculated in step **1329** must be utilized to determine which side data (that is, side A data or side B data) corresponds to which side of the individual (that is, the individual's left side/foot or the individual's right side/foot). In the example illustrated in FIG. **19**, trajectory **1905** (side A data) is to the right of trajectory **1910** (side B data). Thus, a determination is preferably made that side A data corresponds to the individual's right side/foot, and side B data corresponds to the individual's left side/foot.

After being presented with the disclosure herein, one skilled in the relevant art will realize that other methods of determining which side data corresponds to which side of the individual's body may be used.

Although the present invention has been described in terms of particular preferred embodiments, it is not limited to those embodiments. Alternative embodiments, examples, and modifications which would still be encompassed by the invention may be made by those skilled in the art, particularly in light of the foregoing teachings. The preferred and alternative embodiments described above may be combined in a variety of ways with each other. Furthermore, the dimensions, shapes sizes, and numbers of the various pieces illustrated in the Figures may be adjusted from those shown.

Furthermore, those skilled in the art will appreciate that various adaptations and modifications of the above-described preferred embodiments can be configured without departing from the scope and spirit of the invention. Therefore, it is to be understood that, within the scope of the appended claims, the invention may be practiced other than as specifically described herein.

We claim:

1. A method for interpreting data representing forces and torques exerted by a right and left foot on a first and second plate treadmill to determine forces and torques exerted on the right and left foot, over a specified period of time, comprising:

(a) receiving a plurality of signals from the first and second plates in Voltages;

(b) converting said data from Voltages to forces and torques with calibration values;

(c) analyzing the plurality of signals from the first and second plates to determine an occurrence of heel-strikes on the plates and toe-off events from the plates;

(d) filtering said data at a first frequency appropriate for determining frame numbers;

(e) filtering said data at a second frequency wherein said second frequency is higher than said first frequency;

(f) for each one of said plurality of signals, determining frame numbers corresponding to a stride of an individual wherein each frame number includes a beginning point and an ending point;

(g) extracting data for a first side and a second side from each of the first and second plates to obtain a first side data total and a second side data total; and

(h) determining which one of the right and left foot corresponds to said first side data and which one corresponds to said second side data.

2. The method of claim **1**, wherein said forces and torques are measured in an X-axis, a Y-axis, and a Z-axis.

3. The method of claim **1**, wherein at least one file is utilized to accumulate all data.

4. The method of claim **1**, further comprising calculating a Center of Pressure.

5. The method of claim **1**, wherein step (c) further includes refining said frame numbers to ensure that each said beginning point is paired with an ending point.

6. A method for interpreting data representing forces and torques exerted by a right and left foot on a first and second plate treadmill to determine forces and torques exerted on the right and left foot, over a specified period of time comprising:

(a) analyzing a plurality of signals from the first and second plates to determine an occurrence of heel-strikes on the plates and toe-off events from the plates;

(b) filtering said data at a first frequency appropriate for determining frame numbers;

(c) filtering said data at a second frequency wherein said second frequency is higher than said first frequency;

(d) for each one of said plurality of signals, determining frame numbers corresponding to a stride of an individual wherein each frame number includes a beginning point and an ending point;

(e) extracting data for a first side and a second side from each of the first and second plates to obtain a first side data total and a second side data total, extracting data includes

(i) accumulating first side data from said first forceplate,

(ii) accumulating second side data from said first forceplate,

(iii) accumulating first side data from said second forceplate, and

(iv) accumulating second side data from said second forceplate; and

(f) determining which one of the right and left foot corresponds to said first side data and which one corresponds to said second side data.

7. The method of claim **6**, wherein step (b) further comprises, for each one of a corresponding pair of said plurality of signals measuring a same component in a same directional axis, accumulating all first side data to obtain a first side total and accumulating all second side data to obtain a second side total.

8. A method for interpreting data representing forces and torques exerted by a right and left foot on a first and second plate treadmill to determine forces and torques exerted on the right and left foot, over a specified period of time, comprising:

(a) analyzing a plurality of signals from the first and second plates to determine an occurrence of heel-strikes on the plates and toe-off events from the plates;

(b) for each one of said plurality of signals, determining frame numbers corresponding to a stride of an individual wherein each frame number includes a beginning point and an ending point;